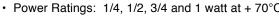
## Vishay Dale



# **Metal Film Resistors, Industrial, ± 1% Tolerance**



#### **FEATURES**





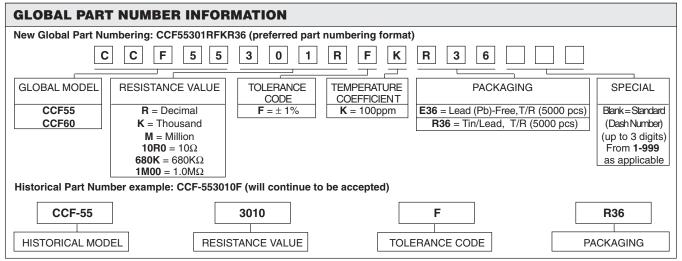
- ± 100ppm/°C temperature coefficient
- · Superior electrical performance
- · Flame retardant epoxy conformal coating
- Standard 5 band color code marking for ease of identification after mounting



- · Tape and reel packaging for automatic insertion (52.4mm inside tape spacing per EIA-296-E)
- · Lead (Pb)-Free version is RoHS Compliant

STANDARD ELECTRICAL SPECIFICATIONS							
GLOBAL MODEL	HISTORICAL MODEL	POWER RATING P <sub>70°C</sub>	LIMITING ELEMENT VOLTAGE MAX.	TEMPERATURE COEFFICIENT	TOLERANCE	RESISTANCE RANGE	E-SERIES
		W	V≌	ppm/°C	%	Ω	
CCF55	CCF-55	0.25 / 0.5	250	± 100	± 1	10R - 3.01M	96
CCF60	CCF-60	0.50 / 0.75 / 1.0	500	± 100	± 1	10R - 1M	96

TECHNICAL SPECIFICATIONS					
PARAMETER	UNIT	CCF55	CCF60		
Rated Dissipation at 70°C	w	0.25 / 0.5	0.5 / 0.75 / 1.0		
Maximum Working Voltage	V≌	≤ 250	≤ 500		
Insulation Voltage (1min)	V <sub>eff</sub>	500	500		
Dielectric Strength	VAC	450	450		
Insulation Resistance	Ω	≥10¹¹	≥10 <sup>11</sup>		
Operating Temperature Range	°C	-65 / +165	-65 / +165		
Terminal Strength (pull test)	Ib	2	2		
Weight	g	0.35 max	0.75 max		

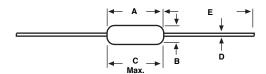


Pb containing terminations are not RoHs compliant, exemptions may apply

### Metal Film Resistors, Industrial, ± 1% Tolerance

Vishay Dale

## **DIMENSIONS** in inches [millimeters]

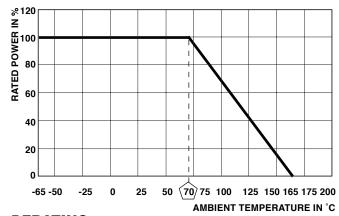


GLOBAL MODEL	A	В	C (Max.)	D	E
CCF55	0.245 ± 0.020	0.090 ± 0.008	0.265	0.025 ± 0.002	1.100 ± 0.040
(Sn/Pb)	[6.22 ± 0.51]	[2.29 ± 0.20]	[6.73]	[0.64 ± 0.05]	[27.94 ± 1.02]
CCF55	0.245 ± 0.020	0.090 ± 0.008	0.265	0.023 ± 0.002	1.100 ± 0.040
(Sn)	[6.22 ± 0.51]	[2.29 ± 0.20]	[6.73]	[0.60 ± 0.05]	[27.94 ± 1.02]
CCF60	0.344 ± 0.031	0.139 ± 0.009	0.400	0.025 ± 0.002	1.000 ± 0.040
	[8.74 ± 0.79]	[3.53 ± 0.23]	[10.16]	[0.64 ± 0.05]	[25.40 ± 1.02]

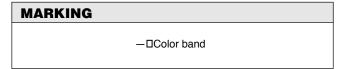
#### **RESISTANCE VALUES**

Vishay Dale Models CCF55 and CCF60 are available in the standard 96 resistance values per decade. Values are obtained from the following decade table by multiplying by powers of 10. As an example: 30.1 can represent 30.1 ohm, 301 ohm, 3.01 kohm, 30.1 kohm or 301 kohm.

KOIIII, SO. I KOIIII OI SOT KOIIII.					
10.0	14.7	21.5	31.6	46.4	68.1
10.2	15.0	22.1	32.4	47.5	69.8
10.5	15.4	22.6	33.2	48.7	71.5
10.7	15.8	23.2	34.0	49.9	73.2
11.0	16.2	23.7	34.8	51.1	75.0
11.3	16.5	24.3	35.7	52.3	76.8
11.5	16.9	24.9	36.5	53.6	78.7
11.8	17.4	25.5	37.4	54.9	80.6
12.1	17.8	26.1	38.3	56.2	82.5
12.4	18.2	26.7	39.2	57.6	84.5
12.7	18.7	27.4	40.2	59.0	86.6
13.0	19.1	28.0	41.2	60.4	88.7
13.3	19.6	28.7	42.2	61.9	90.9
13.7	20.0	29.4	43.2	63.4	93.1
14.0	20.5	30.1	44.2	64.9	95.3
14.3	21.0	30.9	45.3	66.5	97.6



### **DERATING**



PERFORMANCE				
POWER RATING @ + 70°C				
CCF55	1/4 watt	1/2 watt		
CCF60	1/2 watt	3/4 watt and 1 watt		
TEST*	MAXIMUM ∆R	MAXIMUM ∆R		
Thermal Shock	± 0.5%	-		
Short Time Overload	± 0.5%	-		
Low Temperature Operation	± 0.5%	-		
Moisture Resistance	± 1.5%	-		
Resistance to Soldering Heat	± 0.5%	-		
Shock / Bump	± 0.5%	-		
Vibration	± 0.5%	-		
Life	± 0.5%	± 1.0%		
Terminal Strength	± 0.2%	-		
Dielectric Withstanding Voltage	± 0.5%	-		

<sup>\*</sup> Test Methods per MIL-STD-202G/IEC 60115/DIN EN 140000 (as applicable).

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